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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/633,499

08/05/2003

Srikanteswara Dakshina-Murthy

H1134

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06/10/2004

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EXAMINER

LE, THAO P

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/633,499 | DAKSHINA-MURTHY ET AL. | |
| | Examiner | Art Unit | |
| | Thao P. Le | 2818 | |

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>8/5/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The oath/declaration filed on 8/5/03 is acceptable.

Election/Restriction

2. Application's election **without traverse** of claims 1-14 is acknowledged.

Applicants have the right to file a divisional, continuation or continuation-in-part application covering the subject matter of the non-elected claims.

Information Disclosure Statement

3. Information Disclosure Statement (IDS) filed on **8/5/03** and made of record. The references cited on the PTOL 1449 form have been considered.

Specification

4. Applicant is reminded of the proper content of an abstract of the disclosure.

A new abstract is required that is clearly indicative the invention to which the claims are directed. Note that, the claims are directed to a method of forming a fin for a fin field effect transistor, the claims are directed to a method of making a semiconductor device instead of to a semiconductor device.

The length of abstract should be between 50-150 words.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

Claim Rejections

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Buynoski et al., U.S. Patent No. 6,709,982.

The applied reference has a common assignee and a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e)

might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding to claim 1, Buynoski et al. discloses a method of forming a fin for a fin field effect transistor (See Figs. 1-7 and Cols. 1-6), comprising:

- . defining a trench 300 in a layer of first material 230 (Fig. 3);
- . growing a second material 410 in the trench to form the fin (Fig. 4);
- . removing the layer of first material (Fig. 7; lines 38-40, Col. 3).

Regarding to claim 2, Buynosky et al. discloses the limitations as applied for claim 1 above and further discloses wherein the first material comprises an oxide (oxide 230, Fig. 3).

Regarding to claim 3, Buynosky et al. discloses the limitations as applied for claim 1 above and further discloses wherein defining a trench comprises:

- . forming the layer of first material on a substrate (Fig. 2);
- . selectively etching the layer to define the trench (Fig. 3; lines 1-10, Col. 3).

Regarding to claim 4, Buynosky et al. discloses the limitations as applied for claim 1 above and further discloses wherein growing the second material comprises epitaxially growing the second material (lines 16-20, Col. 3).

Regarding to claim 5, Buynosky et al. discloses the limitations as applied for claim 1 above and further discloses wherein removing the layer of first material by etching or some other conventional technique (Fig. 7; lines 38-40, Col. 3). It is inherent that stripping technique is included in conventional technique that used to removing the layer.

Regarding to claim 6, Buynosky et al. discloses the limitations as applied for claim 1 above and further discloses forming a spacer on an upper surface of the fin (SiN or SiO, lines 55-57, Col. 3).

Regarding to claim 7, Buynosky et al. discloses the limitations as applied for claims 1, and 6 above and further discloses wherein forming the spacer comprises depositing a third material on the upper surface (SiN or SiO, lines 55-57, Col. 3).

Regarding to claim 8, Buynosky et al. discloses the limitations as applied for claims 1, 6, and 7 above and further discloses wherein the third material comprises a nitride (SiN, lines 55-57, Col. 3).

Regarding to claim 9, Buynosky et al. discloses the limitations as applied for claim 1 above and further discloses wherein the second material 410 comprises silicon (Fig. 4).

Reasons for Indication of Allowable Subject Matter

7. Claims 10-14 are **objected** to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, since the prior made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations that recite in base claims and further including a step of forming a liner on the spacer and fin whereas the liner comprising a third material.

8. When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-T (7-6).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Thao', with a stylized flourish at the end.

Thao P. Le
Examiner
Art Unit 2818